Outline

- Problem formulation
- iGiselle components
  - Playstyle modeling
  - Emotion modeling
  - Planning
- Applications
iGiselle Credits

**AI design**
Vadim Bulitko (lead)
Sergio Poo Hernandez

**Software development**
Sergio Poo Hernandez (lead)
Igor Pereira Machado
Renato Ribeiro
Sarah Beck
Trevon Romanuik

**Ballet choreography**
Nicole Papadopolous
Laura Sydora

**Photography**
Vadim Bulitko
Emilie St. Hilaire

**Artists**
Emilie St. Hilaire
Sergio Poo Hernandez
Allyson Shewchuk
Luke Slevinsky
Jesse Underwood

**Sound recording/editing**
Nicole Papadopolous
Kevin Hoskin
Emilie St. Hilaire
Laura Sydora
Sergio Poo Hernandez
Allyson Shewchuk
Luke Slevinsky
Jesse Underwood

**Soundtrack**
Wayne DeFehr

**Writing**
Emilie St. Hilaire (lead)
Laura Sydora
Sarah Beck
Nicole Papadopolous
Sergio Poo Hernandez
Nora Stovel

**Visual cast**
Aphra Sutherland
Andrea Ginter
Kandise Salerno
Nathan Lacombe
Charles Nokes
Kiera Keglowitsch
Tara Gaucher
Rachel Ginter
Karly Polkosnik
Sierra Lacombe
Justin Kautz

**Voice cast**
Dawn Harvey
Jessica Watson
Jeanine Bonot
Grant Eidem
Yvonne Desjardins
Dale MacDonald
Sarah Beck
Leah Beaudry
Nicole Papadopolous
Larissa Thompson

**Support**
Emilie St. Hilaire
Sarah Beck
Susan Howard
Sunrose Ko
Geoffrey Rockwell
Oliver Rossier
Mark Riedl & NCSU
Alejandro Ramirez & IRCL
Christina Gier

**Directed by Vadim Bulitko**

**Special thanks to**
Nora Stovel
Pirkko Markula
Problem Formulation

Problem

to develop deeply interactive video games / multimedia training systems

Hypothesis

if you know something about the specific player/trainee
then you can improve their gaming/training experience

Cannot enclose game master with every game/MOOC

need AI

for player-specific gaming/training
Framework

- Player/trainee in an immersive **multimedia environment**
- his/her experience is managed dynamically/on-line
  - by an **AI manager**
  - **models** the player/trainee
  - uses the model to **select the next bit of content**
  - to follow **authorial constraints**
- **AI-based experience management**
iGiselle

- AI experience manager
- Models the player’s
  - playstyle inclinations
  - goal desirabilities
  - emotions
- Uses the model to select narrative content
  - from alternatives computed by an AI planner
  - to keep the player on an emotion curve
2007 - present: Playstyle Modeling

- Model the player’s inclinations
- RPG style
- Select content which is most aligned to with play style
- PaSSAGE
  - shown to increase the player’s fun
2007 - present: Emotion and Culture Modeling

- Emotions need to be modelled procedurally
- mapping from actions to emotion states
- appraisal model of emotions
- resource model of emotions
- EMA + CAB = CEMA
- Now combining CEMA + COR-E
2011 - present: + AI Planning

- Too expensive to manually specify all narrative branches
- AI planning:
  - domain theory + goals = plans
  - use the playstyle model to select the best plan
- \textit{PAST} results:
  - shown to increase perceived agency
2012 - present: Emotion Modeling

Several accommodations of player’s actions may be generated by the planner

select the one to keep the player on an emotion trajectory

PACE (Player Appraisal Controlling Emotions)

iGiselle (Apr ’13 - Oct ’14)
Planning Narrative Alternatives

narrative progression → talk to a rival → confrontation → apology

player

AI
Goal Model

- storytelling
- showing off
- modesty

- career
- conflict avoidance
- attention gain

- narrative progression
- talk to a rival
- confrontation
- apology

- player
- AI
Selecting the narrative

Hope

Talk to a rival

Confrontation

Apology

Narrative progression

Player

AI

1.448

0.892
iGiselle Implementation

- Modified PAST state maintainer (Lisp)
- FastDownward PDDL planner (C++/Python)
- Playstyle model (Lisp)
- Goal model (Lisp)
- Modified CEMA emotion model (Lisp)
- GUI (C#)
- Kinect pose recognizer (C#)

- Domain description
  - PDDL
  - Lisp-like
- Target emotion curve
- Still images
- Voiceover files
- Background music
iGiselle interface

poses to select from

Kinect skeleton

original soundtrack

cell-shaded images: portraits + backgrounds

narrator + voiced-over characters

narrative choices computed by the planner

1. "Giselle introduces herself to the other dancers while warming up."
2. "Giselle warms-up in a corner to calm her nerves."
3. "Giselle warms-up confidently."
iGiselle: next steps

- User study to evaluate effectiveness
  - 200 subjects
  - October - November ’14

- Packaging and releasing iGiselle to the world
  - January ’15
Application #1: Video Games

- On-line: dynamic storytelling to keep the player on an emotion curve
- Off-line: aiding the story designer in exploring the story space
Application #2: Intelligent Training

- Build the training scenario on-the-fly
  - to keep the trainee on a certain emotion/stress curve

- Emergency room training
  - Neonatal intensive care program
  - Royal Alexandra hospital

Application #3: Online Education

- Massive Open Online Courses (MOOCs)
  - use AI to select the content intelligently, per student
  - model the student’s emotional state (e.g., frustration)
Summary

- Improving gaming/training via:
  - AI-based experience management on the fly
    - player/trainee modelling
      - playstyle + goals
      - emotional state
    - automated planning

- Applications
  - video games
  - intelligent training
  - MOOCs

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